



H. NAUTH & SONS

CIVIL ENGINEERING CONTRACTORS

Plot X 1076, Heartburn Village, East Bank Berbice

592-259-3424

hns@hnsguyana.com



PROJECT SUMMARY

OPERATION OF EXISTING MOBILE ASPHALT PLANT

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1. Project Overview

1.1 Site Description

The site for the current H. Nauth & Sons Civil Engineering Contractors (HSN) asphalt plant production is located at Plot X 1076, Heartburn Village, East Bank Berbice on one acre of land with other infrastructure and buildings supporting 15 years of production of asphalt for contracts awarded by the Government of Guyana. Since its an existing operation, all infrastructure works were completed to ensure the sustainable operation and production of asphalt. The land is suitable for the existing activity with no sensitive receptors in close proximity to the operation. As such, there is little or no impact to human health and the environment.



Drawing showing Site Plan of the existing operation of the asphalt plant

1.2 Description of Services

H. Nauth & Sons Civil Engineering Contractors (HNS) is dedicated towards the building of long-standing associations with our Clients based on reliability, performance, quality, and end-user appreciation. Founded in 1993 and Headquartered in the Cooperative Republic of Guyana, H. Nauth & Sons., is a diversified indigenous and local content provider of Civil Engineering and Construction Services serving both public and private sector clients. Our firm is committed to providing the highest level of service, technical expertise, and workmanship. Nauth & Sons Civil Engineering Contractors (H. Nauth & Sons) is a leading Civil Engineering Contractor in Guyana specializing in all Major Construction Works in the Industry. Our accomplishments of completed project includes; Asphaltic Concrete Roads, Concrete Roads, Bridges, Pure Water Supply Systems, Pre-stressed Foundations, Reinforced Concrete Buildings, Steel Fabricated Structures and Interior Finishes inclusive of all Mechanical and Electrical Works. Our objectives are to ensure client satisfaction by delivering a quality product on time and within budget whilst providing a safe and healthy secure workplace to all our employees with a commitment to preserving the environment for our future generations, we will do this by adopting pro-management strategies and by continuous assessment of our policies and operations. Nauth & Sons's senior management has an excellent mixture of business expertise and technical capability amassing to over 30 years' experience. H. Nauth & Sons Civil Engineering Contractors is dedicated to the building of long-standing associations with our Clients based on reliability, performance, quality, and end-user appreciation. Our Company has expanded our construction offerings by providing a Precast Prestressing Concrete facility capable of producing bridges and structural components. In addition, we have provided fuel services to the local communities including one of the largest Gas Service station in the country. Our experienced engineers, project managers, surveyors, operators, and builders perform each project on time, safely, and cost-efficiently. We have successfully executed local and foreign (IDB, CDB, World Bank) funded projects for the various Ministries within the Government and the Private Sector. From Miles of Roads to Bridges, Runways, and Buildings, H. Nauth & Sons has delivered quality construction meeting all international standards. Nauth & Sons aim to ensure that customers will have complete confidence and peace of mind throughout the process of working with us and that all risks have been managed within reasonable contingencies. Our employees are

our most significant resource in attaining our mission and we focus on recruiting, developing, and retaining employees with the skills and competency required for future development. At HNS, Safety and Health are everyone's responsibility. All personnel are accountable to adopt safety as a value and to comply with the "Best Practices" of the highest level of Environmental, Safety, and Health Standards and Guidelines. Our commitment to **Safety Excellence** is emphasized by:

- Management's commitment and accountability to provide a safe and healthy work environment.
- Encouraging open communication between all project personnel and soliciting input, support and action to achieve an injury-free environment.
- Providing training and equipment to help ensure employee safety and project success.
- Promoting safety as a value rather than a directive and extending that value into all areas of our lives.

1.3 Asphalt Plant

The asphalt plant in operation was purchased from India and is capable of producing 60-90 tons asphalt per hour with minimal environmental impacts. This will provide timely production of materials at the strength and standard required. The plant was delivered with all the necessary drawings and components for assembly. It should be noted that the mobile asphalt plant has been in operation for the past 15 years, servicing various project assignments awarded by the Government of Guyana in Region 6. It is strategically positioned downwind to the Berbice River to minimize environmental impacts to residents and sensitive receptors. Further, it should be noted that emission control systems are built into the asphalt plant to mitigate the release of pollutants into the air. These systems include filters, scrubbers, and dust collectors that capture and remove particulate matter and gases generated during the production process. Baghouses, electrostatic precipitators, and wet scrubbers (steam process) are used to trap and collect fine particles and harmful gases, such as volatile organic compounds (VOCs) and nitrogen oxides (NOx). These engineered systems are in place to minimize air pollution and ensure that the emissions from the asphalt plant are within acceptable limits. Regarding the stack emissions from the asphalt plant, particulate matter is negligible since processing of the asphalt is based on a steam

process system which traps the particulate matter and release steam into the atmosphere

1.4 Local Content Plan

H. Nauth & Sons Civil Engineering Contractors is registered on the Government of Guyana's Local Content Register and will continue to employ a local workforce with the aim of contributing to sustainable development in Guyana by supporting the development of local expertise with long-term benefits. Through the projects awarded, the workforce requirement will vary dependent of needs and contractual obligations.

1.4.1 Pre-Construction Phase

This phase which encompassed the site development works which includes excavation in the subgrade, construction of external drains, backfilling of areas with significant depression was already completed.

1.4.2 Construction Phase

The construction activities utilized reinforced concrete for the foundation and structural steel for the plants.

1.4.3 Operation Phase

The design life for the project is estimated at 100+ years.

2. Utilities

The main electricity supply is provided by the Guyana Power and Light (GPL) with backup power provided by a 500KVA stand by generator. The generator is equipped with the necessary mufflers and located in a soundproof enclosure. Potable water is provided by Guyana Water Inc (GWI) and there is at least 12,000 gallons of storage provided on the property to cater for interruptions in the service. Communications and data is provided by Guyana Telephone and Telecommunications (GTT). All greywater effluent is treated before final discharge via the perimeter drains into the primary water bodies. The effluent is envisaged to be minimal and will have little or no impact on water bodies or the surrounding environment. Blackwater effluent is addressed with a septic system designed in accordance with the GNBS standards and EPA

guidelines. To ensure the efficient functioning of the septic tank system, the local sanitation service provider is engaged to maintain the system.

3. Environmental Impacts and Mitigation Measures during Operation

Projects in operation such as an asphalt plant can adversely impact human health and the environment. The following outlines the type of impacts that are often generated during operation, the implication of these impacts and general good working practices that can be adopted during operation to reduce or minimize impacts. If air pollution emissions are not controlled to within acceptable levels during operation, adverse impacts may result to employees, residents in the area and other sensitive receptors. Further, visibility may be impaired from air pollution generated during operation which may result in a greater incidence of accidents on site. Dust and other pollutants can also be a nuisance to residents and can affect vegetation growth and local ecology. However, good working practices can considerably reduce pollution on site. These include basic “low cost” measures such as covering stockpiled materials using in the production of asphalt.

3.1 Air Quality Management

3.1.1 Fugitive Dust

Fugitive dust can be generated from aggregate stockpiles that may be exposed to wind, transport of dusty materials by vehicles on-site and other associated activities. The ongoing project activity has the potential to generate dust at a medium level which will not significantly impact the air quality within the project area. However, most of these impacts are expected to be localized and can either be prevented or reduced. Other aspects of dust emission include but are not limited to:

- a)** Vehicles transporting aggregate materials, loading and off-loading of trucks with materials to be used in the production of asphalt.
- b)** Operation of support facilities such as material stockpiles area.

3.1.2 Impacts associated with Fugitive Dust

- Emissions of particulate matter, volatile organic compounds (VOCs), sulfur oxides (SO_x), nitrogen oxides (NO_x), and greenhouse gases (GHGs) from asphalt production.

- Dust can also be generated from the material stockpiles as a result of wind, especially during dry conditions.

This primary impact is controllable and is expected to be short-termed and localised.

3.1.3 Mitigation measures to reduce potential impacts associated with Fugitive Dust

The following measures would be implemented to reduce the impact of dust within the project environment:

- Equipment that produces significant quantities of dust to be relocated downwind from sensitive receptors.
- Personnel working within the area of operation are required at all times to use dust masks or respirators or other necessary personal protective equipment (PPE).
- Loaded trucks tray are to be covered when transporting material to minimize dust emission.
- The material stockpile will be kept to a minimum height to reduce wind action on materials.
- All material stockpiles will be properly covered, preventing any loose material to be carried away from wind or rain.
- All stockpiled materials will be covered by impervious sheeting. Spraying water regularly on the exposed surface within the site will effectively reduce dust emissions.
- Install and maintain effective dust suppression systems, including bag filters and scrubbers, to reduce particulate emissions.
- Conduct regular maintenance of plant machinery to ensure optimal combustion and minimize VOC, SO_x, and NO_x emissions.
- Monitor ambient air quality with the use of real-time sensors and conduct periodic air quality assessments.
- Limit asphalt production during windy conditions to reduce the dispersion of airborne pollutants.

3.1.4 Exhaust/ Gaseous Emissions

Gaseous pollutants are expected to be generated during the operation of the asphalt and heavy powered mechanical equipment, particularly those using diesel fuels and

from the treatment of surfaces and paving activities. The primary pollutants that will be generated during construction from the equipment include nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon monoxide (CO) and Photochemical Oxidants (generally measured as ozone (O₃)). Combustion emissions from the use of diesel and/or gasoline-fired heavy-duty equipment will be minimal, short-term and localised to the area of the vicinity of operation. Emission impacts are also expected to be unavoidable.

3.1.5 Mitigation measures to reduce potential impacts associated with exhaust/gaseous emissions

- Maintaining equipment following manufacturer's specifications to operate at optimal efficiency to reduce excessive emissions.
- Maintenance log for equipment/machinery shall be utilised, documenting all maintenance actions that are performed.
- All equipment and machinery to be turned off once inactive.
- Exhaust/gaseous emission from equipment will be located as far as possible and at downwind locations from the sensitive receptors and include efficient dust emission control measures (e.g. enclosing the de-bagging and material mixing process and dust filtration equipment, etc).

4.1 Noise and Vibration Management

Adopting good working practices can considerably reduce noise and vibration levels on site. These include basic measures such as using quieter equipment and machines, locating works far away from the sensitive receivers and using noise barriers during operation. Some general good working practices are relatively easy to implement and are effective in reducing noise levels. Noise and vibration will be generated mainly from the operation of the asphalt plant and use of heavy-duty equipment which supports the production of asphalt. . These impacts are unavoidable and expected to be short-term and localised.

Sources of Noise

Noise and vibration may be generated from the following activities:

- Operation powered mechanical equipment during operation;
- Vehicles transporting materials within the site and beyond the site boundary;
- Loading and unloading of materials; and

4.1.1 Impacts associated with Noise

Exposure to noise levels above the internationally accepted level of 90 decibels can cause noise-induced hearing loss. Noise levels above the tolerable threshold of 72 decibels can result in fatigue, tiredness, low morale and decreased productivity.

4.1.2 Mitigation measures to reduce potential impacts associated with noise

During operation, the developer has mitigated the potential impacts from noise by:

- Adopting good working practices to considerably reduce noise levels on site. These include but are not limited to basic measures such as using quieter equipment and machines, locating works far away from the sensitive receptors.
- Adopting quiet equipment and limiting the number of equipment to be used at the same time;
- Arranging transport of materials leaving site during non-peak hours in order to minimize traffic noise;
- Use of electric-powered equipment where applicable instead of diesel-powered or pneumatic-powered equipment;
- Machines and equipment that may be in intermittent use will be shut down between work periods or be throttled down to a minimum;
- Material stockpiles will be effectively utilized, where practicable, to screen noise from on-site activities;
- Noise levels will be kept within the EPA's established limit of 90 decibels during the day and 75 decibels at night.
- Hearing protection such as earplugs will be provided to employees exposed to high noise levels.
- Night works will be avoided, to the most practical extent.
- Use soundproofing materials in high-noise areas and maintain plant machinery to reduce noise levels.
- Monitor noise levels regularly and ensure they remain within permissible limits.
- Operate the plant during daylight hours where feasible to minimize disturbance to nearby residents.

4.2 Water Quality Management

With regard to water quality and wastewater, primary sources of impact during operation include:

- Wastewater generated from the production of asphalt.
- Uncontrolled surface water run-off carries sediment-laden discharges directly into natural water bodies such as the local irrigation channels; sewage and waste generated by employees on site.
- Risk of contamination of nearby water bodies from spills, runoff, and improper disposal of wastewater.

4.2.1 Mitigation measures to reduce potential impacts on water quality and associated surface water pollution

Adopting good working practices can considerably reduce water pollution on site during operation. These include basic measures such as providing an appropriate drainage system, using retaining walls and minimizing stockpile. Some working practices implemented include the following measures:

- Properly cover material stock-piles in a designated area, away from water bodies to prevent excessive sediment deposits.
- Waste storage stockpiles or stockpiled material shall not be placed within 10m of any watercourse and shall have a toe berm construction around.
- Minimize and contain suspended sediment within the immediate zone of operation.
- Domestic sewage from the site will be collected by a local licensed sanitation service provider.
- Discharged of treated wastewater will comply with the discharge limit according to the Guyana National Bureau of Standards and EPA guidelines;
- Emergency spill clean up will be provided in the event of accidents involving leakage of fuel and chemicals;
- Wastewater generated from the site will be treated on-site before it is safely discharged into surrounding water bodies via drains.
- Implement a stormwater management system with proper containment and filtration to capture and treat runoff before discharge.

- Designate areas for equipment washing, ensuring that contaminated water is treated and not released into natural watercourses.
- Conduct routine inspections of storage tanks and pipelines to prevent leaks and spills.
- Store hazardous materials such as fuel and chemicals in designated, well-bunded areas away from drainage channels.

4.3 Waste Management

Adopting good working practices can considerably reduce the waste problem on site. These include basic measures such as reusing asphalt produced materials on site.

Waste Minimization

Recycle asphalt, aggregate materials, and other construction waste.

Proper Disposal

Segregate and dispose of non-recyclable waste in accordance with EPA guidelines. The following are some of the waste that can be expected to be generated during operation:

- **Chemical Waste** - such as cleaning fluids, solvents, lubrication oil, fuel and battery;
- **Asphaltic Material Waste** – during production of asphalt, the possibility of excess material can remain on site.
- **Hazardous Waste** - Ensure proper disposal of hazardous waste (e.g., oil, chemicals) at authorized facilities.
- **Liquid Waste**- Install containment systems to prevent leakage or runoff from fuel, oil, or other liquids. Regularly monitor and test liquid waste to ensure compliance with discharge standards.

4.3.1 Impacts associated with the improper disposal of waste

- Asphaltic waste heap piles often present an eyesore and can affect the aesthetic of any environment.
- The improper disposal of waste, especially food waste can increase the potential of Occupational Safety & Health hazards and also result in unpleasant odours and the attraction of vermin.
- Mismanagement of waste can lead to secondary sources of pollution and contamination of land and water.

4.3.2 Mitigation measures to reduce potential impacts associated with improper waste disposal

- Excess produced asphalt can be reused for other production cycles or be used for depression in community roads.
- Waste generated will be segregated into organic wastes (vegetation, top-soil); inert waste such as plastics, food boxes, rubber, etc.; and hazardous waste. Inert and hazardous wastes will be stored in covered bins.
- Waste generated on site will be collected and transported to a designated landfill by the developer.
- Good housekeeping will be maintained. The collected waste from the site will be collected and safely disposed of through a licensed sanitation service provider;

4.3.3 Domestic waste

- Burning of waste materials and littering around the operation zone will be prohibited.
- Frequent clean-ups will be done by the developer to ensure the work area is kept tidy.
- Daily housekeeping will be done.
- Bins will be available onsite for the storage of waste materials. Domestic Waste will not accumulate for more than 7 days on-site. The developer will transport waste materials to a designated landfill weekly.
- Poorly kept garbage receptacles may harbour pest and even diseases carrying vectors. The developer will do a weekly washing of garbage receptacles.

4.3.4 Sanitary wastewater/sewage waste

- The installed septic tank will be serviced quarterly.
- The waste storage area will be located away from the water body to prevent secondary entry and possible pollution/contamination.

4.3.5 Operational Waste

- The developer will explore all possible avenues for the reuse of asphaltic waste as far as possible.

4.3.6 Asphalt Waste

- Asphalt waste, including wastewaters from batching will only be disposed of at approved and designated disposal sites. All asphalt contaminated wastewater from cleaning or mixing is to be considered toxic and must be prevented from entering any watercourse for at least 48 hours to allow the water to reach neutral pH.

4.3.7 Cleared Debris

- Cleared debris within the site operation will be stockpiled and later transported to a designated landfill by the developer as approved by the EPA.

4.4 Soil Quality

Potential Impact

- Soil contamination from fuel, oil, and chemical spills.

Mitigation Measures

- Install spill containment systems and provide spill kits at strategic locations within the plant.
- Conduct regular maintenance on equipment to prevent leaks.
- Train staff on proper handling and storage of hazardous materials.
- In the event of a spill, implement immediate soil remediation procedures.

4.5 Landscape and Visual

Landscape and visual impact from operation can be determined by the impact to the following:

- ***Landscape impact***

- direct impacts upon specific landscape elements;
- more subtle effects upon the overall pattern of landscape elements that give rise to landscape character, and local and regional distinctiveness;
- impacts upon acknowledged special interests or values such as areas of high landform with special landscape significance.

- ***Visual impact***

- visual compatibility with surroundings
- visual obstruction

- improvement of visual quality
- glare from direct or reflected sunlight or man-made light source

Adopting good working practices can considerably reduce landscape and visual impact on site. The affected areas during construction activities were already restored to their original condition including but not limited to the restoration of disturbed vegetation.

4.6 Ecology

Ecological impact refers to the effect on a habitat or species due to direct or indirect changes in the environment brought about by a project. Besides magnitude and scale, the significance of an ecological impact is also related to the habitat or species to be affected. In general, the impact on an important habitat or species will be more significant in comparison to another less important ones. Adopting good working practices can considerably reduce the ecological impact on the site. These include basic measures such as minimizing the physical extent of the site, erecting fences to protect species from entering the project site during operation. Protected areas, key sensitive locations and areas for rare/endangered species were considered during site selection and operation.

4.7 Cultural Aspects

Potential impacts to cultural sites and heritage may include:

- Loss of cultural sites due to the project;
- The potential damage of the project site during operation;
- Damage to the cultural site due to vibration during the operation of the project.

Adopting good working practices can considerably reduce the impact of cultural aspects on site. These include basic measures such as conducting cultural resources study, incorporating mitigation measures into the design and undertaking continuous monitoring. However, the current site does not have features to be considered culturally significant.

4.8 Environmental Management, Compliance and Monitoring

The Environmental Management, Compliance, and Monitoring Plan (EMCMP) outlines the strategies and procedures that H. Nauth & Sons Civil Engineering Contractors will implement to ensure compliance with environmental regulations and to minimize the environmental impact of the existing asphalt plant operations. This plan is designed to meet the requirements set forth by the Environmental Protection Agency (EPA) and relevant local regulations. The implementation of this Environmental Management, Compliance, and Monitoring Plan will help H. Nauth & Sons Civil Engineering Contractors operate the asphalt plant in an environmentally responsible manner, ensuring compliance with all relevant regulations while minimizing the environmental footprint of its operations. Regular reviews and updates to this plan will be conducted to adapt to changing regulations and improve environmental performance. Further, the Environmental Management, Compliance, and Monitoring Plan (EMCMP) outlines the measures and procedures H. Nauth & Sons Civil Engineering Contractors will implement to ensure environmental sustainability and regulatory compliance during the operation of its asphalt plant. The plan is designed to minimize the impact of plant operations on the surrounding environment, ensure compliance with the Environmental Protection Agency (EPA) standards, and establish a framework for continuous environmental monitoring and improvement. The primary objectives of this EMCMP are to:

- Ensure compliance with the environmental regulations set by the EPA.
- Minimize air, water, soil, and noise pollution from asphalt plant operations.
- Establish clear guidelines for environmental monitoring, reporting, and corrective action.
- Implement best practices for waste management and resource efficiency.
- Protect the health and safety of workers and the surrounding community.

Notwithstanding, H. Nauth & Sons will operate the asphalt plant in compliance with the following regulations:

- Environmental Protection Act
- Air Quality Standards
- Noise Pollution Control Regulations
- Waste Management Act

- Occupational Health and Safety Regulations

Environmental Monitoring

Air Quality Monitoring

- Ensure air quality near the plant with pollutants such as particulate matter (PM), NO_x, and VOCs does not exceed the World Health Organization standards.
- Conduct periodic stack emissions testing to ensure compliance with emission standards.

Water Quality Monitoring

- Ensure water bodies for pollutants aligns with the World Health Organization standards (e.g., hydrocarbons, heavy metals) to ensure the plant is not impacting local water quality.
- Monitor the effectiveness of stormwater management systems through effluent discharge.

Noise Level Monitoring

- Monitoring noise during peak operation times in accordance with EPA standards.
- Implement corrective actions if noise levels exceed permissible thresholds.

Soil Quality Monitoring

- Ensure the soil in vicinity of the plant show no signs of contamination, especially in areas near fuel and chemical storage.

Emergency Response Plan

- Develop a spill response plan to quickly contain and clean up accidental spills of oil, chemicals, or fuel.
- Train staff on spill response procedures and use of spill kits.
- Equip the plant with fire detection and suppression systems.
- Conduct fire drills and safety training for all employees.
- Maintain fire extinguishers and emergency exits in accessible areas.

Employee Training and Awareness

- Provide regular training to employees on environmental best practices, emergency response, and waste management.
- Encourage staff to identify and report potential environmental risks.

Community Engagement

- Establish a communication plan to inform nearby communities of plant operations and environmental initiatives.
- Set up a grievance mechanism for the public to report environmental concerns.

Reporting and Record Keeping

- Submit environmental compliance reports to the EPA.
- Maintain records of all environmental monitoring, incidents, and corrective actions taken.

Continuous Improvement

- Review and update the Environmental Management Plan annually or as needed based on monitoring results, regulatory changes, and technological advancements.
- Set annual environmental performance targets and work towards improving energy efficiency, reducing emissions, and minimizing waste.

H. Nauth & Sons Civil Engineering Contractors is committed to maintaining environmental sustainability while operating its asphalt plant. This EMCMP will serve as a guidance document for the company in its efforts to comply with environmental regulations and continuously improve its environmental performance.